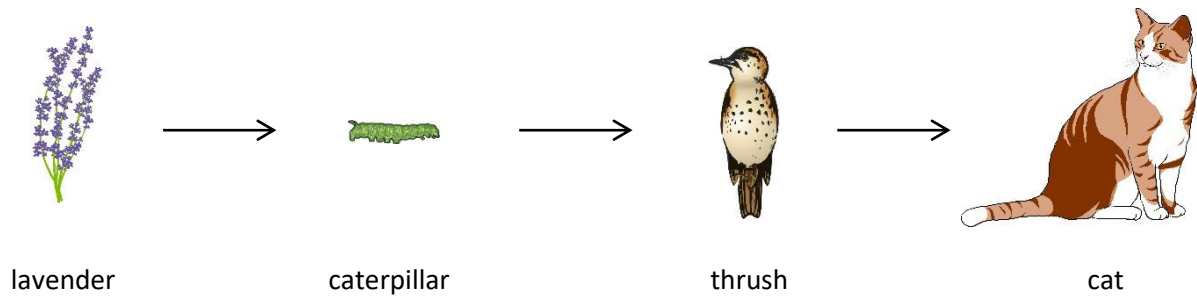


How many organisms?

Lucy made this food chain diagram.



It shows feeding relationships in Lucy's garden.

1. How many caterpillars are there in Lucy's garden?
 - A One
 - B At least one
 - C We cannot tell from the diagram

2. What is the **best** explanation for your answer to question 1?
 - A Each stage in the food chain diagram is a population.
 - B Each stage in the food chain diagram is an individual organism.
 - C The diagram shows one caterpillar.
 - D Lucy might not have counted all of the caterpillars.

Biology > Big idea BOE: Organisms and their environments > Topic BOE1: Interdependence of organisms > Key concept BOE1.1: Food chains and food webs

Diagnostic question

How many organisms?

Overview

Learning focus:	Feeding relationships within a community of organisms can be modelled using food chain and food web diagrams.
Observable learning outcome:	Recognise that the words and pictures in a food chain diagram represent populations of organisms in a community.
Question type:	Two-tier multiple choice
Key words:	food chain, population

What does the research say?

Food chains and food webs are models – they are simplified representations of feeding relationships between populations of organisms in a community (Griffiths and Grant, 1985). They do not show how many organisms are present in the real world community – only how the populations are arranged into trophic levels.

A multinational study of students aged 16-18 identified a number of misunderstandings about food chains and food webs that are commonly held by school children, including that the words and pictures in a food chain represent individual organisms rather than populations of organisms (Barman, Griffiths and Okebukola, 1995).

Ways to use this question

Students should complete the questions individually. This could be a pencil and paper exercise, or you could use the PowerPoint presentation with an electronic voting system or mini white boards.

Differentiation

You may choose to read the questions and answers to the class, so that everyone can focus on the science. In some situations it may be more appropriate for a teaching assistant to read for one or two students.

Expected answers

1. **B** – At least one
OR
C – We cannot tell from the diagram
2. **A** – Each stage in the food chain diagram is a population.

How to respond - what next?

If there is a range of answers, you may choose to respond through structured class discussion. Ask one student to explain why they gave the answer they did; ask another student to explain why they

agree with them; ask another to explain why they disagree, and so on. This sort of discussion gives students the opportunity to explore their thinking and for you to really understand their learning needs. Responses often work best when the activities involve paired or small group discussions, which encourage social construction of new ideas (meaning making) through dialogue.

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References

Barman, C. R., Griffiths, A. K. and Okebukola, P. A. O. (1995). High school students' concepts regarding food chains and food webs: a multinational study. *International Journal of Science Education*, 17(6), 775-782.

Griffiths, A. K. and Grant, B. A. C. (1985). High school student's understanding of food webs: identification of a learning hierarchy and related misconceptions. *Journal of Research in Science Teaching*, 22(5), 421-436.